



Confirmation of Product Type Approval

Company Name: JLLC MANULI HYDRAULICS MANUFACTURING BEL

Address: LOKOMOTIVNAYA STR. 2, ORSHA, VITEBSK REGION, Belarus, 211390

Product: Flexible Hose

Model(s): EQUATOR/1, EQUATOR/2

Endorsements:

Certificate Type	Certificate Number	Issue Date	Expiry Date
Product Design Assessment (PDA)	21-2122589-PDA-DUP	23-JUN-2021	22-JUN-2026
Manufacturing Assessment (MA)	18-PB3387368	03-MAY-2018	02-MAY-2023
Product Quality Assurance (PQA)	NA	NA	NA

Tier

3 - Type Approved, unit certification not required

Intended Service

Mineral oils, glycols and polyglycols, transmission fluids, air with oil vapors, mineral oils in aqueous emulsion (up to 100°C).

Description

EQUATOR/1: Oil resistant synthetic rubber with one high tensile steel braid covered by synthetic rubber with high ozone, weather and heat resistance.

EQUATOR/2: Oil resistant synthetic rubber with two high tensile steel braids covered by synthetic rubber with high ozone, weather and heat resistance.

Ratings

EQUATOR/1:

From DN 06 to DN63

Pressure from 225 bar to 35 bar.

Temperature Range: -55°C / +135°C

Max temperature intermittent +150°C

EQUATOR/2:

From DN 06 to DN51

Pressure from 400 bar to 90 bar.

Temperature Range: -55°C / +135°C

Max temperature intermittent +150°C

For details refer to attachment.

Service Restrictions

- 1) Unit Certification is not required for this product. If the manufacturer or purchaser requests an ABS Certificate for compliance with a specification or standard, the specification or standard, including inspection standards and tolerances, must be clearly defined.
- 2) Hoses are to be complete with factory assembled end fittings or factory supplied end fittings installed in accordance with manufacturer's specifications.
- 3) End connections are to comply with applicable requirements and limitation of the Marine Vessel Rules (4-6-2/5.5.4, 4-6-2/5.5.5, 4-6-7/3.5.1, 4-6-7/5.3.2).
- 4) Hose assemblies are to be installed only where flexibility is required, in clearly visible and readily accessible locations, and are not to be subject to torsional deflection under normal conditions; hose length is to be limited to that required by flexibility only.
- 5) Not to be used in high pressure fuel oil injection systems, steam systems or oil supply lines to boilers.
- 6) Not to be used for installations where repeated and/or frequent flexing is expected.
- 7) Flexible hoses are to be permanently marked by the manufacturer with the following details: Hose manufacturer's name or trademark, Date of manufacture (month/year), Designation type reference, Nominal diameter, Pressure rating, Temperature rating as per 4-6-2/5.7.6 of the Marine Vessel Rules.

Comments

The Manufacturer has provided a declaration about the control of, or the lack of Asbestos in this product.

Only MANULI approved ferrules and inserts are to be used for end fittings, as per the manufacturer's recommendations.

Notes, Drawings and Documentation

- Burst test E-1 dn6, dated 17 Jan 2016 at Manuli
- Burst test E-1 dn8, dated 30 Oct 2015 at Manuli
- Burst test E-1 dn10.pdf, dated 07 Jan 2016 at Manuli
- Burst test E-1 dn12.pdf, dated 17 Jan 2016 at Manuli
- Burst test E-1 dn16.pdf, dated 03 March 2016 at Manuli
- Burst test E-1 dn19.pdf, dated 25 Jan 2016 at Manuli
- Burst test E-1 dn25.pdf, dated 08 Aug 2016 at Manuli
- Burst test E-1 dn31.pdf, dated 15 Jul 2016 at Manuli
- Burst test E-1 dn38.pdf, dated 15 Jul 2016 at Manuli
- Burst test E-1 dn51.pdf, dated 15 Jul 2016 at Manuli
- Burst test E-1 dn63.pdf dated 05 June 2016 at Manuli
- Burst test E-2 dn10.pdf, dated 18 Jun 2015 at Manuli

Burst test E-2 dn12.pdf, dated 20 June 2016 at Manuli
Burst test E-2 dn16.pdf, dated 31 Oct 2015 at Manuli
Burst test E-2 dn19.pdf dated 06 June 2015 at Manuli
Burst test E-2 dn25.pdf, dated 31 Jan 2016 at Manuli
Burst test E-2 dn31.pdf, dated 25 Jun 2016 at Manuli
Burst test E-2 dn38.pdf, dated 25 June 2016 at Manuli
Burst test E-2 dn51.pdf, dated 25 Jun 2016 at Manuli
Burst test E-2 dn6.pdf, dated 21 August 2015 at Manuli
Burst test E-2 dn8.pdf, dated 25 Jul 2016 at Manuli
Certyfikate for MHM, Certyfikate for MHM at Manuli
Data sheet Equator1, Data sheet Equator1 at Manuli
Data sheet Equator2, Data sheet Equator2 at Manuli
EQ-1_DN08-16-51_Hydraulics Test Reports_60042633, EQ-1_DN08-16-51_Hydraulics Test Reports_60042633 dated 15 June 2006 at Manuli
EQ-2_DN38_Hydraulics Test Report_60041946, EQ-2_DN38_Hydraulics Test Report_60041946 dated 15 June 2006 at Manuli
EQ-2_DN51_Hydraulics Test Report_60043516, EQ-2_DN51_Hydraulics Test Report_60043516 dated 15 June 2006 at Manuli
EQUATOR 1 DN 25 MHSz_cold resistance, EQUATOR 1 DN 25 MHSz_cold resistance dated 16 Mar 2011 at Manuli
EQUATOR 1 DN 6 MHSz_cold resistance, EQUATOR 1 DN 6 MHSz_cold resistance dated 25 June 2015 at Manuli
EQUATOR 2 DN 25 MHSz_cold resistance, EQUATOR 2 DN 25 MHSz_cold resistance dated 25 June 2015 at Manuli
EQUATOR 2 DN 6 MHSz_cold resistance, EQUATOR 2 DN 6 MHSz_cold resistance dated 16 Mar 2011 at Manuli
EQUATOR_ fluid resistance, EQUATOR_ fluid resistance dated 18 April 2016 at Manuli
ISO 9001 MHITA_exp, ISO 9001 MHITA_exp
ISO9001 MHS, ISO9001 MHS
EQ-2_DN06-19-51_Fire Resistance TR_60042354, EQ-2_DN06-19-51 dated 24 Oct 2003 at Manuli
fire test, EQ-1_DN06-25-31_Fire Resistance TR_60042707 dated 23 Dec 2010 at Manuli
EQUATOR 1 DN 25 cold resistance dated 25 Jun 2015 at Manuli
EQUATOR 2 DN 6 cold resistance dated 25 Jun 2015 at Manuli
EQUATOR 2 DN 25 cold resistance dated 25 Jun 2015 at Manuli
EQUATOR 2 DN 25, EQUATOR 2 DN 51, EQUATOR 1 DN 31, 63_fire test dated 30 Nov 2010 at Manuli
EQUATOR_ fluid resistance dated 18 Apr 2016 at Manuli

EQUATOR 1 DN 6 cold resistance dated 25 Jun 2015 at Manuli

Technical bulletin reg. change fittings from M00920-16 to M00930-16

EQUATOR 1 BLACK_data sheet

EQUATOR 1 BLUE_data sheet

EQUATOR 2 BLACK_data sheet

EQUATOR 2 BLUE_data sheet

Term of Validity

This Product Design Assessment (PDA) Certificate remains valid until 22/Jun/2026 or until the Rules and/or Standards used in the assessment are revised or until there is a design modification warranting design reassessment (whichever occurs first).

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or previous to the effective date of the ABS Rules and standards applied at the time of PDA issuance. Use of the Product for non-ABS units is subject to agreement between the manufacturer and intended client.

ABS Rules

2021 Rules for Conditions of Classification - Offshore Units and Structures 1-1-4/9.7, 1-1-A2 and 1-1-A3 which covers the following:

2021 Mobile Offshore Unit Rules: 4-2-1/11.29

2021 Rules for Conditions of Classification, 1-1-4/7.7, 1-1-A3 and 1-1-A4, which covers the following:

2021 Marine Vessel Rules: 4-6-2/5.7

2021 Guide for Building and Classing Yachts: 4-4-1/9.19

2021 High Speed Craft Rules: 1-1-4/11.9, 1-1-A2 and 1-1-A3, 4-4-1/9.19

International Standards

EQUATOR/1: EN 853 1SN Ed. 2015; SAE J517 Type 100 R1AT Ed. 2020; ISO 1436 1SN/R1AT Ed. 2017

EQUATOR/2: EN 853 2SN Ed. 2015; SAE J517 Type 100 R2AT Ed. 2020; ISO 1436-2SN/R2AT Ed. 2017

EU-MED Standards

NA

National Standards

NA

Government Standards

NA

Other Standards

NA



A handwritten signature in blue ink, appearing to read "Joseph W. White".

Corporate ABS Programs
American Bureau of Shipping
Print Date and Time: 05-Jul-2021 12:25

ABS has used due diligence in the preparation of this certificate, and it represents the information on the product in the ABS Records as of the date and time the certificate is printed.

If the Rules and/or standards used in the PDA evaluation are revised or if there is a design modification (whichever occurs first), a PDA revalidation may be necessary.

The continued validity of the MA is dependent on completion of satisfactory audits as required by the ABS Rules. The validity of both PDA and MA entitles the product to receive a **Confirmation of Product Type Approval**.

Acceptance of product is limited to the "Intended Service" details prescribed in the certificate and as per applicable Rules and Standards.

This Certificate is valid for installation of the listed product on ABS units which exist or are under contract for construction on or prior to the effective date of the ABS Rules and standards applied at the time of PDA issuance. ABS makes no representations regarding Type Approval of the Product for use on vessels, MODUs or facilities built after the date of the ABS Rules used for this evaluation.

Type Approval requires Drawing Assessment, Prototype Testing and assessment of the manufacturer's quality assurance and quality control arrangements. The manufacturer is responsible to maintain compliance with all specifications applicable to the product design assessment. Unless specifically indicated in the description of the product, certification under type approval does not waive requirements for witnessed inspection or additional survey for product use on a vessel, MODU or facility intended to be ABS classed or that is presently in class with ABS.

Due to wide variety of specifications used in the products ABS has evaluated for Type Approval, it is part of our contract that; whether the standard is an ABS Rule or a non-ABS Rule, the Client has full responsibility for continued compliance with the standard.

Questions regarding the validity of ABS Rules or the need for supplemental testing or inspection of such products should, in all cases, be addressed to ABS.

Attachment to Certificate No. 21-2122589-PDA-DUP

Issued on 23 June 2021 and expiring 22 June 2026

JLLC MANULI HYDRAULICS MANUFACTURING BEL

Lokomotivnaya Str. 2, Orsha
Vitebsk Region Belarus 211390

POSIT	BORE			REF. STAND.	MANULI REF.	TEMPER. RANGE	WORK. PRESS. [bar]	FITTINGS	
	DN	INCH	SIZE						
1	6	1/4	04	EXCEED EN 853 1SN	EQUATOR 1	-55°C / +135°C	225	MF+M00120-04	OPF-04
2	8	5/16	05			-55°C / +135°C	215	MF+M00120-05	-
3	10	3/8	06			-55°C / +135°C	180	MF+M00120-06	-
4	12	1/2	08			-55°C / +135°C	160	MF+M00120-08	-
5	16	5/8	10			-55°C / +135°C	130	MF+M00120-10	-
6	19	3/4	12			-55°C / +135°C	105	MF+M00120-12	-
7	25	1	16			-55°C / +135°C	88	MF+M00130-16	-
8	31	1 1/4	20			-55°C / +135°C	65	MF+M00110-20	OPK-20
9	38	1 1/2	24			-55°C / +135°C	50	MF+M00110-24	OPK-24
10	51	2	32			-55°C / +135°C	40	MF+M00110-32	OPK-32
11	63	2 1/2	40			-55°C / +135°C	35	MF+M03400-40	-
12	6	1/4	04	EXCEED EN 853 2SN	EQUATOR 2	-55°C / +135°C	400	MF+M00910-04	OPF-04
13	8	5/16	05			-55°C / +135°C	350	MF+M00910-05	-
14	10	3/8	06			-55°C / +135°C	330	MF+M00910-06	-
15	12	1/2	08			-55°C / +135°C	275	MF+M00910-08	-
16	16	5/8	10			-55°C / +135°C	250	MF+M00910-10	-
17	19	3/4	12			-55°C / +135°C	215	MF+M00920-12	-
18	25	1	16			-55°C / +135°C	175	MF+M00930-16	-
19	31	1 1/4	20			-55°C / +135°C	150	MF+M00920-20	-
20	38	1 1/2	24			-55°C / +135°C	100	MF+M00910-24	OPK-24
21	51	2	32			-55°C / +135°C	90	MF+M00910-32	OPK-32